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Mobile communications data compressor and transmitter method - compressing and transmitting data on connection between two parties in telecommunication system with data to be transmitted assembled into frames which are compressed prior to transmission

Patent Assignee: NOKIA TELECOM OY

Inventors: KARI H; KARI H H

Patent Family (7 patents, 75 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1997048212	A1	19971218	WO 1997FI345	A	19970603	199805	B
FI 199602381	A	19971208	FI 19962381	A	19960607	199810	E
AU 199729656	A	19980107	AU 199729656	A	19970603	199820	E
EP 898825	A1	19990303	EP 1997924060	A	19970603	199913	E
			WO 1997FI345	A	19970603		
JP 2000513519	W	20001010	WO 1997FI345	A	19970603	200053	E
			JP 1998501239	A	19970603		
US 6434168	B1	20020813	WO 1997FI345	A	19970603	200255	E
			US 1998202203	A	19981207		
JP 3902235	B2	20070404	WO 1997FI345	A	19970603	200726	E
			JP 1998501239	A	19970603		

Priority Application Number (Number Kind Date): FI 19962381 A 19960607

Patent Details

Patent Number	Kind	Language	Pages	Drawings	Filing Notes
WO 1997048212	A1	EN	13	2	
National Designated States,Original	AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN YU				
Regional Designated States,Original	AT BE CH DE DK EA ES FI FR GB GH GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG				
AU 199729656	A	EN			Based on OPI patent WO 1997048212
EP 898825	A1	EN			PCT Application WO 1997FI345
					Based on OPI

					patent WO 1997048212
Regional Designated States,Original	AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE				
JP 2000513519	W	JA	20		PCT Application WO 1997FI345
					Based on OPI patent WO 1997048212
<u>US 6434168</u>	B1	EN			PCT Application WO 1997FI345
					Based on OPI patent WO 1997048212
JP 3902235	B2	JA	8		PCT Application WO 1997FI345
					Previously issued patent JP 2000513519
					Based on OPI patent WO 1997048212

Alerting Abstract: WO A1

The method involves assembling data to be transmitted into frames (F) which contain a header section (1) and a data section (2). One section is compressed prior to transmission.

Two different compression algorithms are made available to the transmitting party and two different decompression algorithms are made available to the receiving party.

The transmitting party selects the algorithm which yields the best compression ratio and transmits the frame over a slow transmission channel. The parties negotiate the compression algorithms to be used on the connection at the beginning of the connection.

USE - Data compressor is for improving data transfer capacity in mobile communications system.

ADVANTAGE - Allows limited capacity of air interface of cellular packet radio network or other low-speed telecommunication resource to be used as efficiently as possible and to enhance traffic encryption against unauthorised listening.

International Patent Classification

IPC	Level	Value	Position	Status	Version
H03M-0007/30	A	I	F	B	20060101
H03M-0007/30	A	I		R	20060101

H04B-0007/26	A	I	L	B	20060101
H04L-0012/56	A	I	L	B	20060101
H04L-0012/56	A	I		R	20060101
H04L-0029/06	A	I		R	20060101
H04W-0028/06	A	I		R	20090101
H03M-0007/30	C	I	F	B	20060101
H03M-0007/30	C	I		R	20060101
H04B-0007/26	C	I	L	B	20060101
H04L-0012/56	C	I	L	B	20060101
H04L-0012/56	C	I		R	20060101
H04L-0029/06	C	I		R	20060101
H04W-0028/02	C	I		R	20090101

US Classification, Issued: 370-521000

US Classification, Issued: 348-568000

US Classification, Issued: 348568, 370521

Original Publication Data by Authority

Australia

Publication Number: AU 199729656 A (Update 199820 E)

Publication Date: 19980107

Assignee: NOKIA TELECOM OY (OYNO)

Inventor: KARI H H

Language: EN

Application: AU 199729656 A 19970603 (Local application)

Priority: FI 19962381 A 19960607

Related Publication: WO 1997048212 A (Based on OPI patent)

Original IPC: H04L-12/56(A) H04Q-7/30(B) H04Q-7/32(B)

Current IPC: H03M-7/30(R,I,M,EP,20060101,20051008,A) H03M-7/30(R,I,M,EP,20060101,20051008,C)

H04L-12/56(R,I,M,EP,20060101,20051008,A) H04L-12/56(R,I,M,EP,20060101,20051008,C) H04L-

29/06(R,I,M,EP,20060101,20051008,A) H04L-29/06(R,I,M,EP,20060101,20051008,C) H04W-

28/02(R,I,M,EP,20090101,20090105,C) H04W-28/06(R,I,M,EP,20090101,20090105,A)

Current ECLA class: H03M-7/30 H04L-12/56B H04L-29/06 H04L-29/06C5 H04Q-7/22S3 H04W-28/06

Current ECLA ICO class: T04L-29:06P T04Q-7:22S3P

European Patent Office

Publication Number: EP 898825 A1 (Update 199913 E)

Publication Date: 19990303

****DATENKOMPRESSION AUF EINER DATENVERBINDUNG DATA COMPRESSION ON A DATA CONNECTION COMPRESSION DE DONNEES LORS D'UNE CONNEXION DE DONNEES****

Assignee: NOKIA TELECOMMUNICATIONS OY, Keilalahdentie 4, 02150 Espoo, FI (OYNO)

Inventor: KARI, Hannu, H., Kullervonkuja 9 B 9, FIN-02880 Veikkola, FI

Agent: Virkkala, Jukka Antero et al, Kolster Oy Ab, Iso Roobertinkatu 23, P.O. Box 148, 00121 Helsinki, FI

Language: EN

Application: EP 1997924060 A 19970603 (Local application) WO 1997FI345 A 19970603 (PCT Application)

Priority: FI 19962381 A 19960607

Related Publication: WO 1997048212 A (Based on OPI patent)

Designated States: (Regional Original) AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

Original IPC: H04L-12/56(A) H04Q-7/30(B) H04Q-7/32(B)

Current IPC: H03M-7/30(R,I,M,EP,20060101,20051008,A) H03M-7/30(R,I,M,EP,20060101,20051008,C)

H04L-12/56(R,I,M,EP,20060101,20051008,A) H04L-12/56(R,I,M,EP,20060101,20051008,C) H04L-

29/06(R,I,M,EP,20060101,20051008,A) H04L-29/06(R,I,M,EP,20060101,20051008,C) H04W-

28/02(R,I,M,EP,20090101,20090105,C) H04W-28/06(R,I,M,EP,20090101,20090105,A)

Current ECLA class: H03M-7/30 H04L-12/56B H04L-29/06 H04L-29/06C5 H04Q-7/22S3 H04W-28/06

Current ECLA ICO class: T04L-29:06P T04Q-7:22S3P

Original Abstract: The invention relates to compressing and transmitting data on a connection between two parties in a telecommunication system comprising at least one slow transmission channel, such as the air interface Um of the radio network. The data to be transmitted are assembled into frames (F) comprising a header section (1) and a data section (2). Prior to transmission, at least the header (1) or the data section (2) of at least some of the frames (F) are compressed. The transmitting party has available at least two different compression algorithms and the receiving party has available at least two different decompression algorithms. The transmitting party compresses at least one section (1, 2) of at least some of the frames (F) with at least two different algorithms, and transmits the frame (F) compressed with the algorithm that produced the best compression ratio.

Finland

Publication Number: FI 199602381 A (Update 199810 E)

Publication Date: 19971208

Assignee: NOKIA TELECOM OY (OYNO)

Inventor: KARI H

Language: FI

Application: FI 19962381 A 19960607 (Local application)

Original IPC: H04L-25/49(A)

Current IPC: H03M-7/30(R,I,M,EP,20060101,20051008,A) H03M-7/30(R,I,M,EP,20060101,20051008,C)

H04L-12/56(R,I,M,EP,20060101,20051008,A) H04L-12/56(R,I,M,EP,20060101,20051008,C) H04L-

29/06(R,I,M,EP,20060101,20051008,A) H04L-29/06(R,I,M,EP,20060101,20051008,C) H04W-

28/02(R,I,M,EP,20090101,20090105,C) H04W-28/06(R,I,M,EP,20090101,20090105,A)

Current ECLA class: H03M-7/30 H04L-12/56B H04L-29/06 H04L-29/06C5 H04Q-7/22S3 H04W-28/06

Current ECLA ICO class: T04L-29:06P T04Q-7:22S3P

Japan

Publication Number: JP 2000513519 W (Update 200053 E)

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Assignee: NOKIA TELECOM OY (OYNO)

Inventor: KARI H H

Language: JA (20 pages)

Application: WO 1997FI345 A 19970603 (PCT Application) JP 1998501239 A 19970603 (Local application)

Priority: FI 19962381 A 19960607

Related Publication: WO 1997048212 A (Based on OPI patent)

Original IPC: H03M-7/30(A) H04L-12/56(B) H04Q-7/38(B)

Current IPC: H03M-7/30(R,A,I,M,EP,20060101,20051008,A) H03M-7/30(R,I,M,EP,20060101,20051008,C)

H04L-12/56(R,I,M,EP,20060101,20051008,A) H04L-12/56(R,I,M,EP,20060101,20051008,C) H04L-

29/06(R,I,M,EP,20060101,20051008,A) H04L-29/06(R,I,M,EP,20060101,20051008,C) H04W-

28/02(R,I,M,EP,20090101,20060101,C) H04W-28/06(R,I,M,EP,20090101,20091231,A)

Current ECLA class: H03M-7/30 H04L-12/56B H04L-29/06 H04L-29/06C5 H04Q-7/22S3 H04W-28/06

Current ECLA ICO class: T04L-29:06P T04Q-7:22S3P

Current JP FI-Terms: H03M-7/30 H04B-7/26 102 H04B-7/26 109 M H04L-11/20 102 Z H04L-12/56 H04L-

12/56 Z

Current JP F-Terms: 5J064 5K030 5K067 5K067AA13 5K067AA30 5K067BB04 5K067BB21 5K067CC04 5K067CC08 5K067DD24 5K067DD51 5K067HH21 5K067HH36JP 3902235 B2 (Update 200726 E)

Publication Date: 20070404

Language: JA (8 pages)

Application: WO 1997FI345 A 19970603 (PCT Application) JP 1998501239 A 19970603 (Local application)

Priority: FI 19962381 A 19960607

Related Publication: JP 2000513519 A (Previously issued patent) WO 1997048212 A (Based on OPI patent)

Original IPC: H03M-7/30(B,I,H,JP,20060101,20070315,A,F) H03M-7/30(B,I,M,98,20060101,20070315,C) H04B-7/26(B,I,H,JP,20060101,20070315,A,L) H04B-7/26(B,I,M,98,20060101,20070315,C) H04L-12/56(B,I,H,JP,20060101,20070315,A,L) H04L-12/56(B,I,M,98,20060101,20070315,C)

Current IPC: H03M-7/30(B,I,H,JP,20060101,20070315,A,F) H03M-7/30(B,I,H,JP,20060101,20070315,C,F) H04B-7/26(B,I,H,JP,20060101,20070315,A,L) H04B-7/26(B,I,H,JP,20060101,20070315,C,L) H04L-12/56(B,I,H,JP,20060101,20070315,A,L) H04L-12/56(B,I,H,JP,20060101,20070315,C,L) H04L-29/06(R,I,M,EP,20060101,20051008,A) H04L-29/06(R,I,M,EP,20060101,20051008,C) H04W-28/02(R,I,M,EP,20090101,20090105,C) H04W-28/06(R,I,M,EP,20090101,20090105,A)

Current ECLA class: H03M-7/30 H04L-12/56B H04L-29/06 H04L-29/06C5 H04Q-7/22S3 H04W-28/06

Current ECLA ICO class: T04L-29:06P T04Q-7:22S3P

Current JP FI-Terms: H03M-7/30 H04B-7/26 102 H04B-7/26 109 M H04L-11/20 102 Z H04L-12/56 H04L-12/56 Z

Current JP F-Terms: 5J064 5K030 5K067 5K067AA13 5K067AA30 5K067BB04 5K067BB21 5K067CC04 5K067CC08 5K067DD24 5K067DD51 5K067HH21 5K067HH36

United States

Publication Number: US 6434168 B1 (Update 200255 E)

Publication Date: 20020813

Data compression on a data connection.

Assignee: Nokia Telecommunications Oy, Espoo, FI (OYNO)

Inventor: KARI H

Agent: Pillsbury Winthrop LLP

Language: EN

Application: WO 1997FI345 A 19970603 (PCT Application) US 1998202203 A 19981207 (Local application)

Priority: FI 19962381 A 19960607

Related Publication: WO 1997048212 A (Based on OPI patent)

Original IPC: H04J-3/00(A)

Current IPC: H03M-7/30(R,I,M,EP,20060101,20051008,A) H03M-7/30(R,I,M,EP,20060101,20051008,C) H04L-12/56(R,I,M,EP,20060101,20051008,A) H04L-12/56(R,I,M,EP,20060101,20051008,C) H04L-29/06(R,I,M,EP,20060101,20051008,A) H04L-29/06(R,I,M,EP,20060101,20051008,C) H04W-28/02(R,I,M,EP,20090101,20090105,C) H04W-28/06(R,I,M,EP,20090101,20090105,A)

Current ECLA class: H03M-7/30 H04L-12/56B H04L-29/06 H04L-29/06C5 H04Q-7/22S3 H04W-28/06

Current ECLA ICO class: T04L-29:06P T04Q-7:22S3P

Current US Class (main): 370-521000

Current US Class (secondary): 348-568000

Original US Class (main): 370521

Original US Class (secondary): 348568

Original Abstract: The invention relates to compressing and transmitting data on a connection between two parties in a telecommunication system comprising at least one slow transmission channel, such as the air interface Um of the radio network. The data to be transmitted are assembled into frames (F) comprising a header section (**1**) and a data section (2). Prior to transmission, at least the header (**1**) or the data section (**2**) of at least some of the frames (F) are compressed. The transmitting party has available at least two different compression algorithms and the receiving party has available at least two different decompression algorithms. The transmitting party compresses at least one section (**1, 2**) of at least some of the frames (F)

with at least two different algorithms, and transmits the frame (F) compressed with the algorithm that produced the best compression ratio.

Claim: 1.A method for compressing and transmitting data on a connection between two parties in a telecommunication system comprising at least one slow transmission channel (Um), the method comprising: * assembling the data to be transmitted into frames (F) which contain at least a header section (**1**) and a data section (**2**), and * compressing at least one section (**1**, **2**) of at least some of the frames (F) prior to transmission, * making at least two different compression algorithms available to the transmitting party, * making at least two different decompression algorithms available to the receiving party, * characterized in that the transmitting party: * compresses at least one section (**1**, **2**) of at least some of the frames (F) with at least two different compression algorithms; * selects the compression algorithm that yielded the best compression ratio; and * transmits the frame (F) over the slow transmission channel (Um) to the receiving party, compressed with said selected compression algorithm.

WIPO

Publication Number: WO 1997048212 A1 (Update 199805 B)

Publication Date: 19971218

DATA COMPRESSION ON A DATA CONNECTION

Assignee: NOKIA TELECOMMUNICATIONS OY, FI (OYNO)

Inventor: KARI, HANNU, H., FI

Language: EN (13 pages, 2 drawings)

Application: WO 1997FI345 A 19970603 (Local application)

Priority: FI 19962381 A 19960607

Designated States: (National Original) AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN YU (Regional Original) AT BE CH DE DK EA ES FI FR GB GH GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG

Original IPC: H04L-12/56(A) H04Q-7/30(B) H04Q-7/32(B)

Current IPC: H03M-7/30(R,I,M,EP,20060101,20051008,A) H03M-7/30(R,I,M,EP,20060101,20051008,C)

H04L-12/56(R,I,M,EP,20060101,20051008,A) H04L-12/56(R,I,M,EP,20060101,20051008,C) H04L-

29/06(R,I,M,EP,20060101,20051008,A) H04L-29/06(R,I,M,EP,20060101,20051008,C) H04W-

28/02(R,I,M,EP,20090101,20090105,C) H04W-28/06(R,I,M,EP,20090101,20090105,A)

Current ECLA class: H03M-7/30 H04L-12/56B H04L-29/06 H04L-29/06C5 H04Q-7/22S3 H04W-12/02H

Current ECLA ICO class: T04L-29:06P T04Q-7:22S3P

Original Abstract: The invention relates to compressing and transmitting data on a connection between two parties in a telecommunication system comprising at least one slow transmission channel, such as the air interface Um of the radio network. The data to be transmitted are assembled into frames (F) comprising a header section (1) and a data section (2). Prior to transmission, at least the header (1) or the data section (2) of at least some of the frames (F) are compressed. The transmitting party has available at least two different compression algorithms and the receiving party has available at least two different decompression algorithms. The transmitting party compresses at least one section (1, 2) of at least some of the frames (F) with at least two different algorithms, and transmits the frame (F) compressed with the algorithm that produced the best compression ratio.

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DATA COMPRESSION ON A DATA CONNECTION**Publication number:** JP2000513519 (T)**Publication date:** 2000-10-10**Inventor(s):****Applicant(s):****Classification:**- international: **H03M7/30; H04L12/56; H04L29/06; H04W28/06; H03M7/30;****H04L12/56; H04L29/06; H04W28/02;** (IPC1-7): H03M7/30;**H04L12/56; H04Q7/38**- European: **H03M7/30; H04L12/56B; H04L29/06; H04L29/06C5; H04Q7/22S3;****H04W28/06****Application number:** JP19980501239T 19970603**Priority number(s):** WO1997F100345 19970603; F19960002381 19960607**Also published as:**

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WO9748212 (A1)

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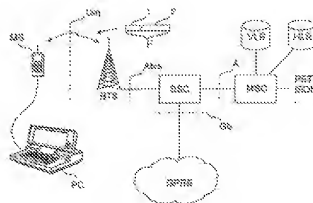
EP0898825 (A1)

more >>

Abstract not available for JP 2000513519 (T)

Abstract of corresponding document: **WO 9748212 (A1)**

The invention relates to compressing and transmitting data on a connection between two parties in a telecommunication system comprising at least one slow transmission channel, such as the air interface Um of the radio network. The data to be transmitted are assembled into frames (F) comprising a header section (1) and a data section (2). Prior to transmission, at least the header (1) or the data section (2) of at least some of the frames (F) are compressed. The transmitting party has available at least two different compression algorithms and the receiving party has available at least two different decompression algorithms. The transmitting party compresses at least one section (1, 2) of at least some of the frames (F) with at least two different algorithms, and transmits the frame (F) compressed with the algorithm that produced the best compression ratio.

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